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United States Patent [19]

Eveker et al.

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[54] **COMPRESSOR STALL AND SURGE
CONTROL USING AIRFLOW ASYMMETRY
MEASUREMENT**

[58] **Field of Search** 415/1, 17, 26,
415/27, 28, 118; 60/39.29; 701/102, 103,
106

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[56] **References Cited**

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[51] **Int. Cl.⁶** **F01D 17/08**

[52] **U.S. Cl.** **415/1; 415/17; 415/27;**
60/39.29

[57] **ABSTRACT**

A technique for controlling compressor stall and surge is disclosed. In a gas turbine engine, static pressure asymmetry is sensed at a plurality of locations along the circumference of the compressor inlet. Time rate of change of the mass flow in the compressor is also estimated using pressure measurements in the compressor. A signal processor uses these signals to modulate a compressor bleed valve responsive to the level of flow property asymmetry, the time rate of change of the annulus average flow to enhance operability of the compressor.

32 Claims, 9 Drawing Sheets